

REMARKS

The Examiner is thanked for the thorough examination and search of the subject.

Claims 69-90 are pending; Claims 80-90 are newly added; Claims 1-68 are canceled.

New claims 80-90 claim a wire wirebonded over the second metal layer, as disclosed on the top of page 11 of the Specification and as shown in Fig. 2.

Response to Claim Rejections under 35 U.S.C. 102 and 103

Applicants respectfully traverse the rejections for at least the reasons set forth below.

Response to Claims 69-79

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As previously amended, independent claim 69 is recited below:

69. A semiconductor chip or wafer comprising:
- a semiconductor substrate having multiple semiconductor devices;
 - an interconnecting metallization structure over said semiconductor substrate;
 - a passivation layer over said interconnecting metallization structure, wherein an opening in said passivation layer exposes a contact point of said interconnecting metallization structure;
 - a first metal layer over said contact point, wherein said first metal layer comprises aluminum; and
 - a second metal layer over said first metal layer, wherein said second metal layer is used to be wirebonded thereto.
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Reconsideration of Claims 69, 70 and 72-74 rejected under 35 U.S.C. 102(e) as being anticipated by Yanagida (US6,545,355) is respectfully requested.

Applicants respectfully assert that the structure claimed in claim 69 patentably distinguishes over the citation by Yanagida (US6,545,355).

Yanagida teaches an electronic component comprising a passivation layer 14 over an interconnecting metallization structure 12, wherein an opening in the passivation layer 14 exposes a contact point 12a of the interconnecting metallization structure 12. The electronic component further comprises a first metal layer 20a over the contact point 12a, wherein the first metal layer 20a comprises aluminum. The electronic component further comprises a second metal layer 24 over the first metal layer 20a. ~ See FIG. 1, and lines 4-20, col. 6 ~

Yanagida teaches that the second metal layer 24 is used to have a solder ball 26 formed thereon. ~ See FIG. 1, and lines 21-22, col. 6 ~ However, Yanagida fails to teach, hint or suggest the second metal layer 24 may be used to be wirebonded thereto.

Even though applicants disclose that aluminum provides wire-bonding capability, Yanagida fails to disclose that a second metal layer over a first metal layer comprising aluminum over a pad exposed by an opening in a passivation layer can be used to be wirebonded thereto. Moreover, Yanagida fails to teach, hint or suggest the second metal layer 24 may be used to be wirebonded thereto.

The Examiner considers that the claims are not patentable because “although Yanagida fails to specifically disclose “wire bonding capability”, the same material is utilized in Yanagida as in Applicant’s invention therefore it would have the same characteristics”. ~ *See the last paragraph in page 2 in the last Office Action mailed Mar. 13, 2006* ~ Applicants respectfully traverse the Examiner’s opinion. The mechanism of bonding a wire to a pad by a wirebonding process is significantly different from that of bonding a solder ball to a pad. The Examiner has failed to establish a prima facie case of anticipation, since Yanagida does not teach that a second metal layer over a first metal layer comprising aluminum over a pad exposed by an opening in a passivation layer is used to be wirebonded thereto, as claimed.

The Examiner considers that the claims are not patentable because “a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim” ~ *See the last paragraph in page 7 in the last Office Action mailed Mar. 13, 2006* ~

Applicants respectfully traverse the Examiner’s opinions, as recited in the following paragraphs. The meaning of “capable of” is extremely different from the meaning of “used to”. “Metal layer capable of being wirebonded thereto” means “the material of the metal layer having a nature required to have the material of a wire bonded thereto”, which is a natural phenomenon that is not required to be invented or thought of by a human. However, the trait of “Metal layer used to be wirebonded thereto” is required to be invented or conceived by a human to form the combination of a metal layer and a wirebonding technology. The independent claim 69 should

be patentable because Yanagida fails to teach, hint or suggest a usage to have a metal layer to be wirebonded thereto.

A functional limitation is an attempt to define something by what it does, rather than by what it is (e.g., as evidenced by its specific structure or specific ingredients). There is nothing inherently wrong with defining some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper. *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971).

A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. A functional limitation is often used in association with an element, ingredient, or step of a process to define a particular capability or purpose that is served by the recited element, ingredient or step.

Extracted from MPEP 2173.05(g)

In the above-mentioned from MPEP, a functional limitation should be evaluated and considered, just like any other limitation of the claim. Therefore, applicants consider that the functional limitation, “used to be wirebonded thereto”, should be seriously considered like other limitations of the claim. Yanagida fails to teach, hint or suggest the second metal layer 24 may be used to be wirebonded thereto. The mechanism of bonding a wire to a pad by a wirebonding process is significantly different from that of bonding a solder ball to a pad. The Examiner has failed to establish a prima facie case of anticipation, since Yanagida does not teach that a second metal layer over a first metal layer comprising aluminum over a pad exposed by an opening in a passivation layer is used to be wirebonded thereto, as claimed. The Examiner should not focus too much on whether a metal layer comprising aluminum over a pad exposed by an opening in a

passivation layer is ever disclosed, but should instead reconsider the determination of anticipation, whether a second metal layer over a first metal layer comprising aluminum over a pad exposed by an opening in a passivation layer is used to be wirebonded thereto, based on the claim as a whole. Applicants think claim 69 would be patentable, as reconsidered as a whole, because Yanagida fails to disclose the feature that a second metal layer over a first metal layer comprising aluminum over a pad exposed by an opening in a passivation layer is used to be wirebonded thereto.

For at least the foregoing reasons, applicants respectfully submit independent claim 69 patently distinguishes over the prior art references, and should be allowed. For at least the same reasons, dependent claims 70-79 patently define over the prior art as well.

Reconsideration of Claim 71 rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagida (US6,545,355) in view of Howell et al (US6,806,578) is respectfully requested.

Applicants respectfully assert that the structure claimed in claim 69, as well as newly added claim 80 patentably distinguishes over the citation by Yanagida (US6,545,355) in view of Howell et al.

Although Howell et al discloses a topmost oxide layer over a wafer, as discussed above, Yanagida fails to teach, hint or suggest the second metal layer 24 may be used to be wirebonded thereto. The combination of references further fails to teach, hint, or suggest a wire wirebonded to the second metal layer 24.

Reconsideration of Claim 75 rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagida (US6,545,355) in view of Galloway (US5,783,868) is respectfully requested.

Applicants respectfully assert that the structure claimed in claim 69 and claim 80 patentably distinguishes over the citation by Yanagida (US6,545,355) in view of Galloway.

It is agreed that Galloway teaches forming a gold metal layer. However, as discussed above, Yanagida fails to teach, hint or suggest the second metal layer 24 may be used to be wirebonded thereto. The combination of references further fails to teach, hint, or suggest a wire wirebonded to the second metal layer 24.

Reconsideration of Claims 76-78 rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagida (US6,545,355) in view of Weng (US6,720,243) is respectfully requested.

Applicants respectfully assert that the structure claimed in claim 69 and claim 80 patentably distinguishes over the citation by Yanagida (US6,545,355) in view of Weng.

While it is agreed that Weng teaches the barrier layer materials used in Applicants' invention, as discussed above, Yanagida fails to teach, hint or suggest the second metal layer 24 may be used to be wirebonded thereto. The combination of references further fails to teach, hint, or suggest a wire wirebonded to the second metal layer 24.

Reconsideration of Claim 79 rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagida (US6,545,355) in view of Chikawa et al (US5,310,699) is respectfully requested.

Applicants respectfully assert that the structure claimed in claim 69 and claim 80 patentably distinguishes over the citation by Yanagida (US6,545,355) in view of Chikawa et al.

Although it is agreed that Chikawa et al show a barrier layer of Ti-W, as discussed above, Yanagida fails to teach, hint or suggest the second metal layer 24 may be used to be wirebonded thereto. The combination of references further fails to teach, hint, or suggest a wire wirebonded to the second metal layer 24.

CONCLUSION

Some or all of the pending claims are believed to be in condition for allowance. Accordingly, allowance of the claims and the application as a whole are respectfully requested.

It is requested that should Examiner Lewis not find that the Claims are now Allowable that she call the undersigned at 845 452-3204 to overcome any problems preventing allowance.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'S. B. Ackerman', with a stylized flourish at the end.

Stephen B. Ackerman, Reg. No. 37,761